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Pesticide Fact Sheet Number 82.1
Chlorimuron Ethyl (Classic)

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16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, science findings.

b. Identifiers/Open-Ended Terms

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Washington, DC 20460

EPA

Pesticide Fact Sheet

Name of Chemical: Chlorimuron Ethyl (Classic)
Reason for Issuance: New Chemical Reg.
Date Issued: July 30, 1987
Fact Sheet Number: 82.1

1. Description of Chemical

Generic Name: Ethyl 2-[[[[(4-chloro-6-methoxyprimidin-2-yl)amino]carbonyl]amino]sulfonyl]benzoate

Common Name: Chlorimuron ethyl
Trade Name: DuPont Classic Herbicide; DPX-F6025
EPA Shaughnessy Code: 128901
Chemical Abstracts Service (CAS) Number: 90982-32-4
Year of Initial Registration: 1986
Pesticide Type: Herbicide
Chemical Family: Sulfonylurea
U.S. and Foreign Producers: E.I. du Pont de Nemours & Company

2. Use Patterns and Formulations

Application Site: Soybeans
Types and Methods of Application: Postemergence and preemergen foliar by ground equipment.

Application Rates: 1/2 to 1 1/2 ounces active ingredient per acre (oz ai/A) preemergence.

1/8 to 3/16 (oz ai/A) postemergence.

Types of Formulation: 25% dispersible granule
Usual Carrier: Water

3. Science Findings

Summary Science Statement:

All data required for registration of this chemical are acceptable to the Agency.

Chlorimuron ethyl has low acute toxicity (Category III for acute dermal and primary eye irritation and Category IV for all other forms of acute toxicity.)

It was not oncogenic to mice or rats, not teratogenic to rabbits or rats, and not mutagenic. The pesticide is foliarly absorbed and translocated within the plant. It works by inhibition of cell division in shoots and roots. The major degradation pathway is hydrolysis.

The pesticide will leach in some soils and has the to potential contaminate ground water at very low concentrations. Chlorimuron ethyl demonstrates negligible toxicity nontoxic to birds and slightly toxic to fish and invertebrates. The nature of residues in plants is adequately understood and adequate methodology is available for enforcement of a tolerance of 0.05 part per million (ppm) on soybeans.

Chemical Characteristics:

Physical State: Solid
Color: Off-white to pale yellow
Odor: None
Melting Point: 181 °C
Density: 1.51 gram/cubic centimeter (g/cc)
Solubility in various organic solvents at 25 °C

	g/100 mL
Acetone	7.05
Acetonitrile	3.10
Benzene	0.815
Ethyl acetate	2.36
Ethyl alcohol	0.392
n-hexane	0.006
Methyl alcohol	0.740
Methylene chloride	15.3
Xylenes	0.283

Solubility in Water at Controlled pH:

pH	Solubility grams/100cc
1.3	.015
1.9	.015
2.5	.015
4.2	.041
5.0	.090
5.8	.990
6.5	4.500
7.0	12.000

Handling Characteristics: Store product in original container only.

Toxicology Characteristics:

Acute Toxicity:

Acute Oral Toxicity (Rat): Greater than (>) 5000 milligrams/kilogram (mg/kg)
Toxicity Category IV[1]/

Acute Dermal Toxicity (Rabbits): > 2000 mg/kg
Toxicity Category III[1]/

Primary Eye Irritation (Rabbit): Draize score = 1
Toxicity Category III[1]/

Primary Dermal Irritation (Rabbit): Primary irritation score from .13 to .63
Toxicity Category IV[1]/

Primary Skin Irritation (Guinea Pig): Not irritating
Toxicity Category IV[1]/

Dermal Sensitization (Guinea Pig): Not a sensitizer
Toxicity Category IV[1]/

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[1]/ Labeling statements required for: Toxicity Category III for acute dermal - "Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling."
Toxicity Category III for primary eye irritation - "Causes (moderate) eye injury (irritation). Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling."
Toxicity Category IV - no precautionary statements required.

Major Routes of Exposure:

The major routes of exposure are via dermal and eye contact.

Chronic Toxicity:

90-Day Feeding Study (Mouse) resulted in a no observable-effect level (NOEL) of 18.75 mg/kg/day.

90-Day Feeding Study (Dog) resulted in a NOEL of 2.5 mg/kg/day.

One-Year Feeding Study (Dog) resulted in a NOEL of 6.25 mg/kg/day.

18-Month Chronic Feeding/Oncogenicity Study (Mouse) resulted in a NOEL of 3.75 mg/kg/day and no oncogenic effects at 187.5 mg/kg/day for the highest dose tested (HDT).

Chronic Feeding/Oncogenic Study (Rat) resulted in a NOEL of 12.5 mg/kg/day and no oncogenic effects at 125 mg/kg/day (HDT).

2-Generation Reproduction Study (Rat) resulted in a maternal toxicity NOEL of 12.5 mg/kg/day and a fetotoxic NOEL of 1.25 mg/kg/day.

Teratology Study (Rat) resulted in a maternal toxicity NOEL of 30 mg/kg/day, and a developmental toxicity NOEL of 30 mg/kg/day.

Teratology Study (Rabbit) resulted in a maternal toxicity of 60 mg/kg/day and a developmental toxicity NOEL of 15 mg/kg/day.

Mutagenicity (in vivo Bone Marrow Test) - not mutagenic.

Mutagenicity (Ames test) - not mutagenic.

Mutagenicity (Unscheduled DNA Synethsis Activity) - not mutagenic.

Physiological or Biochemical Behavioral Characteristics:

Foliar absorption: Rapid.

Translocation: Systemic after absorption through either the foliage or the roots.

Mechanism of pesticidal action: Inhibits plant cell division of rapidly growing tips of roots and shoots by inhibition of amino acid synthesis.

Metabolism in plants: Tolerant species metabolize the compound to nonherbicidal metabolites.

Persistence in plants: Does not persist in plants.

Environmental Characteristics:

Adsorption and leaching in basic soil types: Chlorimuron ethyl was very weakly absorbed on the two sandy loam soils and only weakly absorbed on the two silt loam soils. Absorbed radioactivity was readily desorbed from the sandy loam soils, but was more tightly retained on silt loams. Chloroimuron ethyl had low mobility on Keyport silt loam, intermediate mobility on Flanagan silt loam and Cecil sandy loam, and high mobility on Woodstown sandy loam.

Microbial breakdown: Initial deactivation of the molecule is through hydrolysis followed by complete metabolism to low molecular weight compounds through normal soil microbial degradation.

Loss from photodecomposition/volatilization:
Photodegradation of chlorimuron ethyl is not a major degradation pathway, but did proceed at twice the rate in exposed samples compared to the nonexposed samples.

Bioaccumulation:
The octanol/water partition coefficient (K_{ow}) of 1.3 and available information show the hydrolysis products have a lower K_{ow}. Since the correlation between octanol/water partitioning and fish accumulation is only accurate within a factor of 100, chlorimuron ethyl and its degradation products have potential to accumulate in fish to levels 130 times higher than levels in water.

Resultant average persistence:
Chlorimuron ethyl has a half-life of 7.5 weeks in soil.

Environmental fate and surface and ground water contamination concerns:
Chlorimuron methyl has the potential to leach and contaminate ground water at very low concentrations.

Exposure of humans and nontarget organisms to pesticide or degradates:
Human risk from exposure is minimal because of low acute toxicity (Category III and IV). Nontarget organism risk from exposure is minimal because maximum expected residues on soil and water do not approach the toxicity values for the organisms tested.

Ecological Characteristics:

Avian Acute Toxicity (Mallard Duck):	> 2510 mg/kg
Avian Dietary Toxicity (Bobwhite Quail):	> 5620 ppm
Avian Dietary Toxicity (Mallard Duck):	> 5620 ppm
96-Hour Fish Toxicity (Rainbow Trout):	> 12 mg/L
96-Hour Fish Toxicity (Bluegill Sunfish):	> 10 mg/L
48-Hour Invertebrate Toxicity (*Daphnia magna*)	> 10 mg/L
48-Hour Acute Toxicity (Honey Bees):	12.5 ug/bee

Chlorimuron ethyl demonstrates negligible toxicity to birds on both an acute and dietary basis. It is slightly toxic to fish and invertebrates. It is not expected to adversely affect endangered/threatened species because of low toxicity and low application rate.

Tolerance Assessment:

The nature of the residue in plants is adequately understood. The residue of concern is chlorimuron ethyl. Adequate methodology (high pressure liquid chromatography [HPLC] using a photoconductivity detector) is available for enforcement.

Tolerances are established for residues of the herbicide chlorimuron ethyl (ethyl 2-[[[[(4-chloro-6-methoxypyrimidin-2-yl)amino]carbonyl]amino]sulfonyl] benzoate in or on soybeans at 0.05 ppm.

The acceptable daily intake (ADI) based on the 1-year dog feeding study (NOEL of 6.25 mg/kg/day) and using a hundredfold safety factor is calculated to be .0625 mg/kg/day. The maximum permissible intake (MPI) for a 60 kg human is calculated to be 3.70 mg/day. The theoretical maximum residue contribution (TMRC) for this tolerance for a 1.5 kg diet is calculated to be .000012 mg/day. The current action will use .0184 percent of the ADI. There are no other published tolerances for this chemical.

4. Summary of Regulatory Position and Rationale

a. None of the risk criteria listed in 40 CFR 154.7 have been exceeded for chlorimuron ethyl. The Agency will issue registrations for substantially similar products and will issue significant new uses.

Rationale: A review of available data indicate that no risk criteria have been exceeded or met for chlorimuron ethyl.

b. The Agency is not imposing a ground water advisory statement for chlorimuron ethyl.

Rationale: Even though chlorimuron ethyl has the potential to leach in some soils and contaminate ground water at very low levels, the available data do not indicate a concern for ground water contamination. This was determined by consideration of the low application rates (ounces per acre) and the very low levels expected to reach ground water.

c. The Agency is not requiring reentry data or protective clothing for chlorimuron ethyl.

Rationale: Human risk from exposure is minimal because of the low acute toxicity.

d. The Agency is not imposing endangered species labeling for the use on soybeans.

Rationale: Based on the low toxicity and low application rate, chlorimuron ethyl is not expected to adversely affect endangered animal species. Refer to sections on ecological characteristics and endangered species in Chapter III for detailed information on available data.

e. Additional residue data are not required to support the use on soybeans.

Rationale: The Agency has determined that available residue data adequately support the established tolerance on soybeans.

F. Additional data are being required on droplet size spectrum, drift field evaluation, seed germination/seedling emergence, vegetative vigor, and aquatic plant growth.

Rationale: The agency has determined that the potential for off target movement and carryover of this chemical are not adequately understood. This lack of definition, coupled with the low volume application of this herbicide, make these studies necessary.

5. Summary of Major Data Gaps

None.

6. Contact Person at EPA

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